

2015 Whitley Awards

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This year the Whitley Medal has been awarded to *Biology and Evolution of Crocodylians* by Gordon Grigg and David Kirshner (CSIRO Publishing). Although well recognised by the general public for their size and notoriety as voracious marine predators, this group of reptiles has received scant attention from biologists. This has now been rectified by the publication of this comprehensive and lavishly illustrated volume. It is indeed a benchmark in zoological publishing. The gripping cover of *Crocodylians* foreshadowed to the Whitley Committee a book of outstanding scholarship. After 18 preliminary pages, there are 649 pages of science, photographs and illustrations that mark the book as a potential Whitley winner. The range of material covered, the global scope, the quality of the writing, the scholarship, the care in the layout, and the development of the story of this fascinating reptilian group made a compelling case for the Whitley Medal.

While the Whitley Medal is awarded for an outstanding book published in the previous 12 months, the Whitley Special Commendation is awarded for extensive and significant publications devoted to the promotion of Australasian fauna. This award was presented to Don Bradshaw. Don is regarded as the father of the zoological discipline of ecophysiology. He made his mark in zoological publication while Professor of Zoology at the University of Western Australia from 1976 to 2004.

The Royal Zoological Society of NSW presented the winners of the 2015 Whitley Awards at a ceremony at The Australian Museum in Sydney on Friday 16 October 2015. The Awards, first presented in 1979, are a tribute to Gilbert Whitley (1903-1975). He was the Curator of Fishes at The Australian Museum from 1922 to 1964. For many years, Whitley was also the editor of the Society's publications and a very active member of the RZS Council.

The Whitley Awards are for outstanding publications that promote Australasian fauna and especially its conservation. The Whitley Medal and Special Commendation are the most sought after prizes in Australian zoological publishing. Whitley Certificates of Commendation are also awarded each year in a number of categories.

The Whitley Committee of the RZS NSW for 2015 comprised Arthur White, Hayley Bates and Noel Tait and Adele Haythornthwaite as joint chairs. The Committee is most appreciative of the number of expert reviewers who have provided us with their advice and commendations. This has given us more confidence in our unenviable task of choosing Award winners from a line-up of wonderful entries. The procedure for Whitley Award ceremony 2015

differed from previous years, we utilised a professional recording service (Spark and Cannon), and transcripts of the presentations have made the task of capturing the presentations so much easier, and indeed livelier. We also recorded the responses by the recipients, which expressed the spontaneity of their feelings at the very moment that they accepted their Awards. As on previous occasions, we also photographed the proceedings so that authors, illustrators, editors, and publishers, would become known beyond the group that attended the Award ceremony.

Over the 37 years of presentations of Whitley Awards, the Whitley Committee and Council have been astonished by the quantity and quality of zoological publishing in Australia. This spans the whole spectrum from children's readers to the most academic of zoological resources and in between there are field guides, natural history and historical zoology to name but a few categories. With the advent and increase in electronic dissemination of information, one might have expected that print material would be on the wane. That this has not happened, and it certainly is not evident in this year's entries, indicates that the publication of books remains as strong and healthy as ever. There must still be something about a ravishingly illustrated and well-written text within an enticingly designed cover that engenders scholarship and hence for the want of a better word 'gravitas'. This may of course change. Electronic publications, which have in fact been welcome entries for sometime now, may become commonplace or even dominate the Whitley Awards. But, as yet, there is no sign of this.

Noel Tait

On behalf of the Whitley Awards Committee.



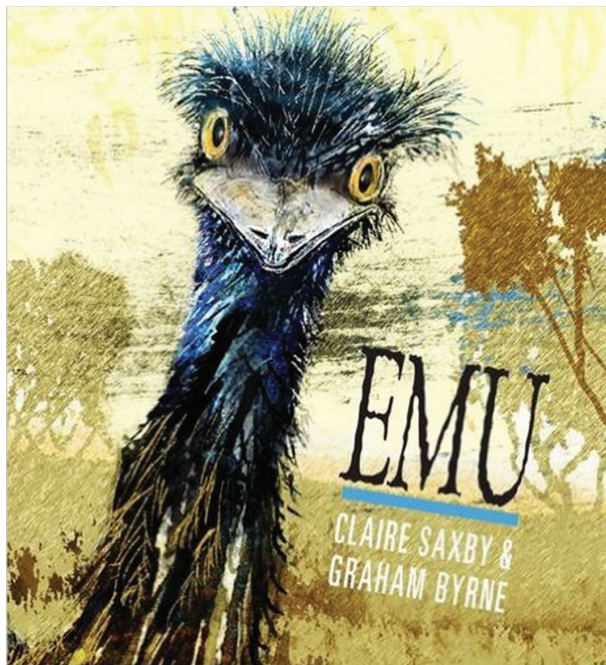
Noel Tait, host. Photo by Dan Lunney.

The presentation ceremony began with the awarding of the Whitley Certificates of Commendation

Whitley Certificates of Commendation

This year 11 books were awarded Certificates of Commendation in the following categories:

Children's Book



Emu by Claire Saxby, illustrated by Graham Byrne: Walker Books Australia, August 2014, ISBN 9781922179708, \$27.95

The emu is an iconic Australian species. With its inability to fly, emus are commonly remembered for their speed, long legs, inquiring neck and head. Strange as this bird might be, emus are also well known for their unusual paternal investment. In this children's book, the author, Claire Saxby, tells the story of a male emu raising his young. From egg to adolescence, we follow the tale, season by season through perils of predation and endangering weather.

Claire Saxby has written this story beautifully, imaginatively describing the evolving relationship between the father emu and his chicks. Along the way, we learn many things about emus. We are cleverly provided with facts about an emu's weight range, height, diet, courtship rituals and running speed. All this is told in a warm, descriptive style that would be very appealing to young readers. The illustrations by Graham Byrne are truly beautiful, capturing the harsh yet beautiful scenery of an open eucalyptus forest. Graham transports the reader to the tough grasslands where the story takes place.

I believe this story will inspire young readers to find out more about Australian wildlife. I'm sure that many young readers and their parents will derive a great deal of pleasure in reading this book together, and I would like to congratulate Claire Saxby and Graham Byrne and Walker Books Publishers.

Hayley Bates, University of NSW

Claire Saxby in reply: How lucky are we to live in a country that has such animals. How lucky are we to have publishers who let us write and illustrate stories about those animals. How lucky are we to have zoological societies who love our work as well. Thank you to all of you. I'm overwhelmed. That's about it for me, over to you, Graham.

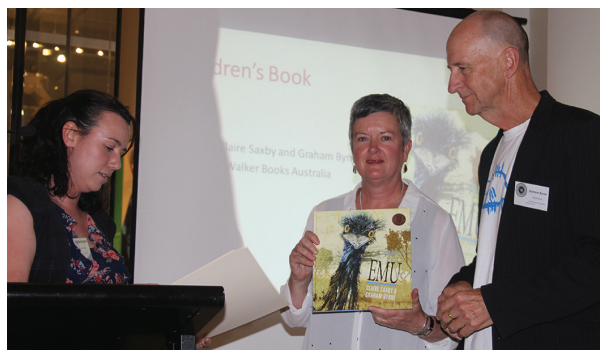
Graham Byrne in reply: Thank you. It is wonderful to get the award, and now we've got both sides of Australia's coat of arms, with Big Red Kangaroo last year.

Claire (in conclusion): The collaboration between an author and an illustrator is frequently not as people imagine, one of close connection. It is filtered through a publisher and editor with good reason that they should have the freedom to do their work and bring their story to the book. I think this has worked very well here to the point that at the very end of the editing process, just before it went to print, there was a final proof-reading in the office of Walker Books, and they came back to me and said, "There's just too many adjectives in that first sentence. Can you lose one?"

I looked and I looked and I didn't actually want to lose any of them. However, Graham had drawn Scraggle Gums in such a way that I could lose the word because he had given them to me in image, and that was part of the magic of working with Graham that he just took my words to such a beautiful place. I mean, how beautiful is this emu. Thank you.



Hayley Bates, presenter. Photo by Dan Lunney.



Hayley Bates, presenter, with Claire Saxby and Grahame Byrne (Whitley award winners). Photo by Dan Lunney.

Children's Series



That's....Bizarre/Freaky/Lethal/Scary/Stinky/Sick
by Stella Tarakson: Pascal Press, May 2015, ISBN
97819251277-82 -44 -75 -37 -68 -51, \$9.95

The natural world is full of intriguing animals that are of endless fascination to us all. In this series of books written for primary school children, Stella Tarakson has found many instances of wonder among our native fauna to stoke the imagination of her young readers. In the six books in this series, subtitled *The Gross and Frightening Facts about Aussie Animals*, the author has included many interesting and accurate facts certain to appeal to

inquiring minds that might be piqued by all things that are sick, lethal, scary, freaky, stinky and bizarre.

The invertebrate world is well represented, with short but informative cameos featuring tapeworms, cockroaches and centipedes, to name but a few. The aptly named snotfish makes an appearance, alongside the usual dangerous suspects, such as sharks, spiders and snakes. All facts are boldly illustrated with clear photographs from the archives of Steve Parish Publishing, and the short 'grabs' of information with a usually graphic (but so fascinating!) photo provide a powerful hook for the young reader. Stella Tarakson knows her audience well – I envisage groups of young readers sharing these books with exclamations that reflect the titles. "That's Sick!" they cry. Yes it is, but in a way that will satisfy every zoologist, aspiring or otherwise.

Congratulations to Stella Tarakson and Steve Parish Publishing for their successful publication that will educate, entertain and inspire our zoologists of the future.

Adele Haythornthwaite,
University of Sydney

Stella Tarakson (in reply): I just want to say thank you. First, to my publisher who sadly can't be here tonight because she's at the Frankfurt Book Fair. I think that's a fairly good reason for not turning up. Thank you to her for inviting me to write this series. I had a lot of fun writing about Aussie animals that fart and burp and vomit and all sorts of wonderful things, it was a lot of fun writing it, and thank you, of course, to the Society for encouraging writers by offering wonderful awards like this. Thank you.

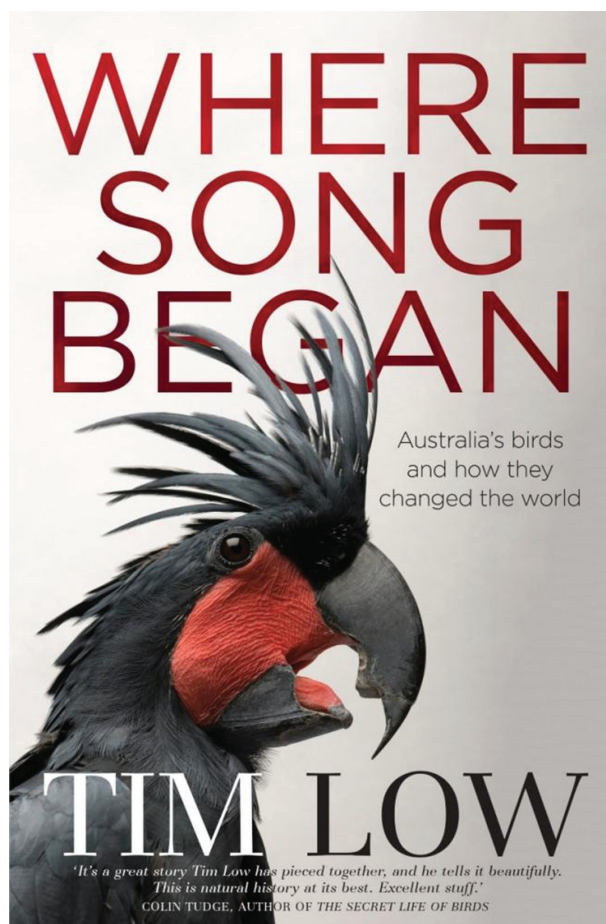


Adele Haythornthwaite, presenter. Photo by Dan Lunney.



Stella Tarakson (Whitley award winner). Photo by Dan Lunney.

Popular Zoology



**Where Song Began by Tim Low: Penguin
Random House Australia, June 2014, ISBN
9780670077960, \$32.99**

Where Song Began is a story - an epic story. While ostensibly about Australian songbirds, their origins and their contribution to the modern-day global avifauna, this book also tells the story of plate tectonics, island biogeography, climate change, ecological interactions, animal behaviour and phylogeny. These fundamental components of our understanding of evolution are woven

together in such a way that the reader gets a grasp of text-book concepts without the hard slog or even realising it. This is because the narrative is laced with personal experiences, fascinating anecdotes and the thoughtfulness of a writer who is passing on the understanding he has pieced together from a life-time of natural curiosity.

Australian honeyeaters occupy a central role in the story because they are the most diverse group of Australian songbirds and songbirds in turn are the most diverse order of birds globally. Research over the last few decades has shown that songbirds have their roots in Australasia, making their history a subject of particular interest. The book explores their origins and evolution, with their dominance explained by the extraordinary nature of the eucalypt nectar resource, which in turn is explained by curiosities of climate and soil fertility. Brain size, vocal repertoire, and co-operative breeding contribute to the picture. And although some of the explanations are vulnerable to criticism as being "Just So" stories, they are always plausible and backed up with both personal observations and reference to an extensive literature.

While songbirds provide the point of entry, parrots, pigeons, ratites, waterbirds and seabirds are all woven into the narrative, with most of the classic discoveries in Australian ornithology contributing to the picture. The book is very well researched and the in-text referencing is impressive. The reference list provides a "Who's Who" of Australian ornithology.

I think the book will be especially valuable to students because of the accessibility it provides to important concepts combined with its overview of much of the key Australian ornithological literature. I found the book extremely thought-provoking, and I envisage it stimulating many Ph.D. projects as people ponder the ideas presented and think about new ways of testing them. However, the book has appeal to a broad audience of readers who derive inspiration from nature, especially people with even a passing interest in birds. It is therefore a thoroughly deserving winner of the 2015 Whitley award for Popular Zoology.

Richard Major, The Australian Museum

Zoological Resource



***The Action Plan for Australian Mammals 2012* by John Woinarski, Andrew Burbidge and Peter Harrison: CSIRO Publishing, June 2014, ISBN 9780643108738, \$120.00**

When I was a student in high school, the history teacher, Mr Edwards, marked essays and exams by weighing the paper on which the essays were written. My classmate, Geoff Robertson, kept coming first. His work was most weighty, and he went on to be a QC and an international human rights lawyer; it seems it was well predicted by weight alone.

Woinarski's book is heavy, very heavy, and at 1038 pages it is a book rich in detail. What's more, by using smaller font in some of the tables, they have crammed a lot into the book, and it is a great collection of valuable tables. Woinarski, Burbidge and Harrison is a world class book. *The Action Plan for Australian Mammals 2012* is a monumental achievement. The book is a landmark in our grasp of the status of Australia's mammal fauna. It is an outstanding achievement of scholarship, of commonsense, and the authors consulted 230 fellow experts, and that's probably most of Australia's mammalogists.

The book dovetails perfectly with the way we assess the status of species. In fact, their years on the Commonwealth Government's Threatened Species Committee has been put to excellent use in the style of the book – an action plan based on a most useful formula of status, background information, with headings such as ecology

and monitoring and then recovery, management and conservation objectives. The scholarship draws on a wealth of literature. There are 110 pages of references, including grey literature. The book has no obvious flaws, and that, in Australian mammalogy, is a real achievement. Let me add that, in some of these points I'm making, Chris Dickman helped me in a discussion at lunch-time today and we nodded in agreement. So, John, there you are, you've got a couple of Royal Zoological Society of NSW mammalogists equally valuing your remarkable book, in addition to the RZSNSW Whitley Committee, who look at all the books in a wider context.

Now a warning: sorry, John, Andy, Peter. Second editions are mandatory when you're doing this sort of work. You will be able to incorporate comments, new information and, as you are well aware, a lot of new information has appeared in the last few decades, and it will continue to appear. With any luck, a second edition might expand to provide accounts for all those poor, wonderful little animals with an O, which are species of "least concern", and for which "no account is included" in your book.

One thing I do note too is the tome is complementary to, and not a competitor for, Van Dyck's and Strahan's 2008 *The Mammals of Australia*. I think we're lucky in Australia to have such high quality work detailing the taxonomy, ecology, distribution and other attributes of Australian mammals. We should not stop here, and this book is a brilliant 2012 benchmark for our effort to understand and conserve Australia's mammal fauna, especially with its emphasis on conservation and action for threatened species.

The introduction to *The Action Plan for Australian Mammals 2012* opens with the statement, "Mammals help define and characterise Australia." (p1) However, the first sentence in para 2 (p1) states, "But the legacy is dwindling." I think this is becoming part of John's life motto and motivation. No wonder, as an aim of their action plan, the authors state: "It is our purpose to raise the profile of the diversity of Australian mammals, and to alert the Australian public to the conservation needs of this fauna" (p3). So, John, Andy, Pete, you have succeeded in that aim and you richly deserve this award.

Dan Lunney, RZS NSW councillor



Dan Lunney (left) with John Woinarski (Whitley award winner). Photo by Martin Predavec.



John Woinarski (Whitley award winner). Photo by Dan Lunney.

John Woinarski in response: Thank you very much, Dan. We're delighted and honoured to receive this commendation. I'm speaking, obviously, on behalf of Andrew and Peter as well who can't make it but send their acknowledgements and regards. If you count the words, it's slightly larger than *War and Peace*, but perhaps slightly less exciting. A book of that size has very many acknowledgements associated with it. We thank very much CSIRO Publishing, and particularly Tracey Millen and Julia Stuthe who took our monumental pile of notes and turned it into something that is beautiful, and that's very much appreciated.

We thank the sponsors of the book, the Norman Wettenhall Foundation, Australian Wildlife Conservancy, The Department of Environment and North Australian NERP Hub whose contribution largely related to changing the purchase price of the book from \$300 to \$100, and that's very much appreciated. That's probably a CSIRO trade secret; I probably shouldn't have said that. My apologies. Anyway, it was very much appreciated.

As Dan alluded to, between us we have more than 100 years of experience trawling Australia trying to find out about mammals in very remote parts of the country. In fact, the book also relied very much on us channelling the expertise of more than 200 individual experts who each

contributed, some with some cajoling and others with rampant enthusiasm, and the book is so much better for their contributions. The book took us three years of weekends and night times, and it took a considerable toll on our domestic lives, and we thank very much our families. It wouldn't have been possible without them.

Not only is the book sizable, but also we actually like it. It's been, I think, academically significant, if you look at Google Scholar, the standard marker of how much a book is cited in other accounts. It's been cited more than 60 times in other papers over the last year, which I think is very substantial indeed. It's important that it's academically significant, but it's also important that it makes a difference. This book was launched by the NSW and Federal Ministers for the Environment who both assured us with straight faces that they had read all of it.

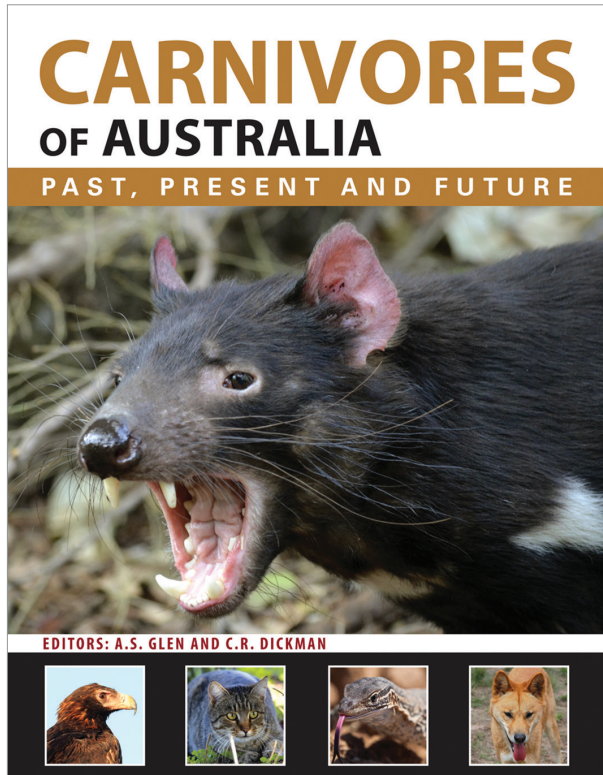
Politicians being trustworthy characters, it's important that they did. They both said it actually swayed their commitments to conservation, and I think this is extremely important, whereas until recently Australian politicians were prepared to accept extinction. This book is a book of loss and sorrow. The Federal Minister for the Environment said, "We will do this no more, we will mark this as a line in the sand, and I am prepared to commit to try and avoid any further preventable extinctions in Australia on the basis of this book," so it was that persuasive.

Subsequently, that influence has been extended in terms of Australia's first threatened species strategy, which also had its genesis in, I think, this book. The book is not only a detailed and tedious, perhaps, account of the conservation status and the problems of every Australian mammal taxon, but it's also about how our society values things and how we learn to live in this country, and what this book is saying is that we have not done that. There are more species of mammals that have become extinct in Australia than any other country in the world over the last 200 years, and we regard this as entirely unacceptable.

This book offers not only that sense of loss but also a hope to try to turn things around to do things differently. Thank you.

Briana Melideo (CSIRO Publishing) in response: Just on behalf of the editors who unfortunately could not be here, Doug, Matt, Dorian and Phil but they wanted to say thank you to the Royal Zoological Society of NSW for this award. On behalf of the publishers, thank you as well. They were great editors to work with. The others, Al and Chris as well as John, all of you guys that edit volumes and heard cats to get your contributing authors to submit, I am in complete admiration of you all, and, yes, these editors were fantastic to work with. We were delighted to publish this book, and thank you to the Royal Zoological Society.

Zoological Text



Carnivores of Australia by Alistair Glen and Christopher Dickman: CSIRO Publishing, November 2014, ISBN 9780643103108, \$89.95

When I first approached this book, I didn't know what to expect: A book on carnivores can follow many different paths. It could have taken a taxonomic route, presenting individual pictures and synopses of the various carnivores within Australia, and, as the book does talk about, there are many different carnivores within Australia. The book could have followed a more textbook style trying to cover the entire topic, but in doing so not presenting new information but simply consolidating the information that's out there about carnivores.



Martin Predavec, presenter. Photo by Dan Lunney.

What this book chose to do is present a series of 18 papers by various authors looking at aspects of the broad range of carnivores within Australia, and, as the book states, its focus is on carnivores with a small c, so it includes reptiles, it includes birds and it includes mammals. It looks at both native and introduced carnivores.

The papers are, individually, quite focused. For example, there is a chapter on the hybridisation of dingoes with domestic dogs, another on the interaction of mammalian, reptilian and avian predators, and yet another on the role of predator exclosures on the conservation of Australian fauna. Not all topics relating to carnivores are addressed in the book, but those that are addressed are thoroughly addressed. I suspect that the 18 papers could have been published separately in various journals and they would have been a fine contribution to the literature, but it's by bringing them together in the one book that their strength really shines through.

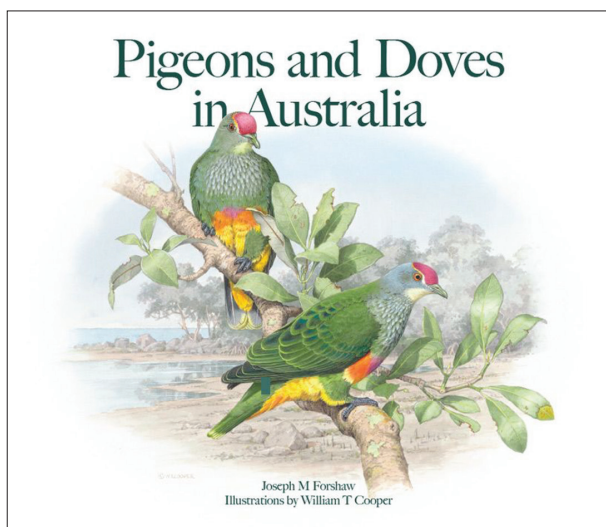


Martin Predavec (left), Al Glen and Chris Dickman (Whitley award winners), and Briana Melideo (publisher). Photo by Dan Lunney.



Al Glen (Whitley award winner). Photo by Dan Lunney.

Illustrated Text



***Pigeons and Doves in Australia* by Joseph Forshaw, illustrated by William Cooper: CSIRO Publishing, April 20, ISBN 9780643096332, \$185.00**

Pigeons are remarkable birds, but they are much underrated. For example, a few months ago I saw a feral pigeon quite deliberately catch the train from Redfern to Burwood. It knew exactly what it was doing, and very purposefully went about its journey. It hopped on, potted around, and then hopped off once we came into Burwood station. Why fly when you can take the train? No need for an Opal Card either. There is a remarkable diversity of native pigeons and doves in Australia but historically they've been really overshadowed by the more charismatic Australian fauna that is perhaps a bit more different and less familiar than pigeons and doves.

Our parrots, finches and honeyeaters have stolen a lot of the avian limelight from what is actually a really remarkable radiation of pigeons and doves in this part of the world. For much of the last 150 years or so, I think they've really been underappreciated and no recent monograph has really done this group justice, but that has changed and I'm delighted to say that this book is really everything that you would want in a comprehensive assessment of this fascinating group of birds.

One of these strengths is the unifying theme of the book: the importance of carnivores within the Australian ecosystems. This is seen in the devastating impacts that introduced carnivores have had on our native fauna, as well as the importance of native carnivores in shaping and maintaining our ecosystems. As well as authoring papers within the book itself, the two editors, Al Glen and Chris Dickman, have brought the 18 contributions together in a way that is much greater than their individual parts. This is a book that will be of value to researchers and students, as well as of interest to a broader readership, so congratulations to Al and Chris and to CSIRO Publishing

Martin Predavec, RZS NSW councillor

The text is very detailed and scholarly and thoroughly researched, but at the same time very accessible, as we have come to expect from Joe Forshaw. The production values are very high in this book. It is a beautiful book to hold and to read and to flip through. It feels nice, it looks nice, and it is a very, very pleasant experience. But for me the highlights of this book are the illustrations by William Cooper. Each of the major plates is quite simply a masterpiece that would not look out of place on your wall, or even in a gallery, but each plate is not just aesthetically pleasing. They are detailed and accurate and the lifelikeness that is captured is quite extraordinary. Bill makes high quality wildlife illustrations look really easy, and it's not. I've spent far too much time this year trying to have a kangaroo illustrated that actually looked like a kangaroo and even then I ended up failing. It's a sign of a true master that these pictures just look so brilliant, so lifelike. You can almost see what is going on in the bird's head by the look in its eyes, and the detail, as I've said, is extraordinary.

That sort of level of detail really only comes about when you have a great knowledge of birds, when you've researched them, when you know their habitat, when you know them intimately, and there's also a great deal of skill and just sheer hard work that goes into producing something quite so magnificent. With Bill's sad passing earlier this year, we have not just lost a national treasure; we have lost one of the world's great natural history illustrators. However, the world is much richer for Bill's work and for his life. Therefore, I am really delighted to be able to present this award to *Pigeons and Doves in Australia* by Joseph Forshaw and William Cooper and the team at CSIRO Publishing.

Mark Eldridge, The Australian Museum



Mark Eldridge, presenter. Photo by Dan Lunney.

Periodical



Australian Birdlife edited by Sean Dooley:
Birdlife Australia, January 2015, ISBN
22000127, \$12.95

This year's winner of the periodical category is *Australian Birdlife*, produced by Birdlife Australia and edited by Sean Dooley in Melbourne. It is a glossy colour magazine about Australian birds and their habitats. It is produced quarterly and is available in both hard copy and online. An interest in birds attracts a broad church of people. They include professional ornithologists, recreational bird watchers, obsessive twitchers, wildlife photographers, conservationists, environmental managers and policy makers, environmental educators, bird tour guides, in fact, anyone who has more than a passing interest in the natural environment.

Australian Birdlife is an outstanding vehicle for communicating cutting-edge bird research, conservation and bird watching issues. In doing so, it draws on the talents of some of the best natural history writers, bird photographers, birders, researchers and birding professionals in Australia for its highly visual, educational and easy-to-read content. The March 2015 issue of *Australian Birdlife* is a classic example of the breadth of topics covered by this periodical.

Some of the feature stories in this particular



Stephen Ambrose, presenter. Photo by Dan Lunney.

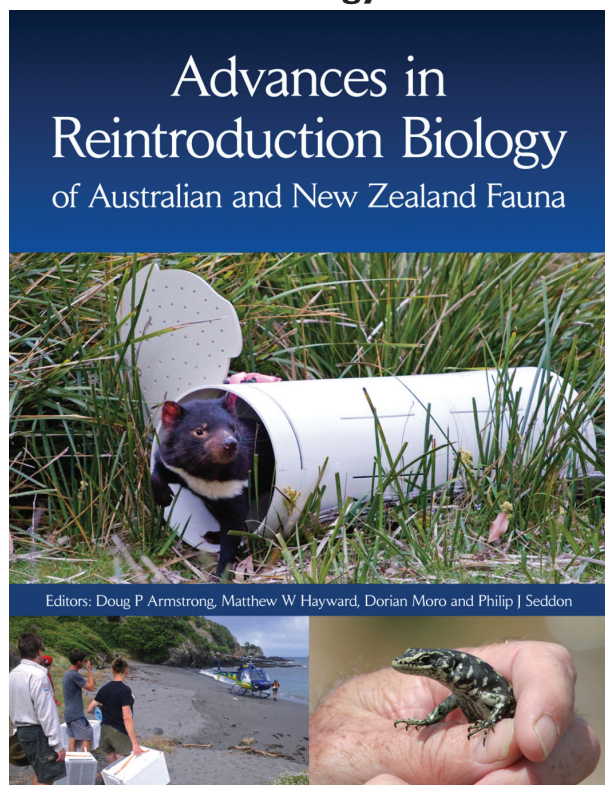
edition include, a summary of the known biology and conservation threats, including photographs of 11 species of grasswrens, one of the most elusive group of birds in Australia. The front cover here shows one of those grasswren species, the Kalkadoon Grasswren. Just to give you some idea of the quality of some of the photographs within this journal, here are some of the other grasswren species. Another article in this issue deals with the reintroduction and conservation programs on islands off New Zealand, and their successes that other countries aspire to emulate.

One of tonight's other award recipients, Dr John Woinarski, contributed to this issue of *Australian Birdlife*. John wrote an article with his colleagues on the Cocos Buffbanded Rail and how it was reintroduced onto the islands of the Southern Atoll of the Cocos-Keeling Island Group. Tim Low, another Whitley Award winner, also wrote an article in this issue about the evolutionary origin of birds. There's also an article about a guide to birding in Columbia, one of the most bird species-rich countries in the world. Among all of those expert writers, there are some fledgling bird watchers writing on the joys of watching birds in their back garden, or seeing a new bird species in the local wetland.

Of course, a group of bird watchers that I actually belong to look forward to the quarterly reports of recent sightings of bird rarities or vagrants in Australia. The ability of *Australian Birdlife* to convey topical ornithological news to such a broad audience in a highly effective, high-quality and concise manner makes this periodical a worthy recipient of the 2015 Whitley Award for Periodicals. Unfortunately, Sean can't be here today to accept the award, so we will make sure that the certificate gets to him. Sean is actually in Victoria preparing for this weekend's National Garden Bird Count.

Stephen Ambrose, RZS NSW councillor and Environmental Consultant

Conservation Biology



***Advances in Reintroduction Biology of Australian and New Zealand Fauna* by Doug Armstrong, Matthew Hayward, Dorian Moro and Philip Seddon: CSIRO Publishing, May 2015, ISBN 9781486303014, \$89.95**

The four editors of this book are actually all members of the IUCN reintroduction specialist group, and thus are very qualified to act as editors for this really substantial volume. They have an incredibly large number of authors contributing to the 20 chapters, ranging from academics to researchers at the coalface organising the reintroductions. There are people working for various agencies both in Australia and New Zealand, plus people from museums, sanctuaries, consultants, NGOs and zoos, so there are actually in total 41 presenters from 24 different agencies. They have been very inclusive and have produced a very comprehensive account of the advances as well as suggesting future developments, so it's amazing for me, having recently edited rather a large volume of worms that this has happened so quickly to be published in 2015. Basically, it relies on a workshop that was held as recently as 2013.

While the focus is largely on terrestrial vertebrates, there is a chapter devoted to fish, and there are a few invertebrates. The chapters themselves focus on themes rather than case examples, which are given in boxes within the text. I found it very interesting that they also provided some historical examples of reintroductions. I was surprised to see this has been going on for quite some time. Some of the first introductions were in New Zealand from 1895 to 1907, where three species

of declining flightless birds were relocated to offshore islands in Fiordland in the South Island.

At the same time, attempts were made in Australia to transport declining populations of marsupials to islands off Victoria and South Australia. This book arose from a symposium that was held in November 2013, hence my comment that within two years they have managed to produce this publication. It was held at Massey University in New Zealand, and it was basically celebrating 20 years since that inaugural meeting was held at Healesville Sanctuary.

The chapters respond to key questions, such as how is the establishment probability affected by size and composition of the released group, how are postrelease survival and dispersal affected by pre and postrelease management, what habitat and landscape conditions are needed to ensure these populations survive, and how does the genetic makeup affect the persistence of these introduced populations? These topics all relate to populations, and then there's another series of chapters that relate to the survival of metapopulations.

For example, how heavily should animals be removed from a healthy population in order to populate these areas where they're going to be reintroduced? How does the genetic makeup of those introduced species actually affect the persistence of those introduced populations? They also discuss a final section on metapopulations by issues, such as how heavily should source populations be harvested, how should individuals be allocated amongst sites, should translocations be used to compensate the isolation? Finally, they consider the impact of these introductions and their parasites on the ecosystem, and how do these introductions affect the species' composition of the sites where these introductions occur? They're really trying to explain the science behind these reintroductions; it's a very serious book. Other chapters consider the role of sanctuary networks, and zoos, and they also review the Western Australian translocation and fish translocation.

Finally, there's a chapter on the planning and implementation of translocations and the approval process, so this is a very comprehensive account of the advances we have made during the past few decades, what has worked and what has not, the impact of pest species on these new introductions and the role of offshore islands where predators and introduced species can be controlled. They also, as I say, indicate the success rates for each of these boxes where they give specific indications.

Some of the best examples that have worked are where animals are introduced onto islands where predators and pest species are not present. Obviously, in the ideal world we would not need introductions as populations of species would not be declining, habitats not being lost or introduced species not coming into the equation. In reality, there is going to be increasing pressure to plan these reintroductions, so we really need to know how to make these work and also for them to be cost effective.



Pat Hutchings, presenter: Photo by Dan Lunney.

Most of the species that have been introduced are iconic species. I'll just give you an example. A lot of publicity has been devoted to reintroductions of disease-free Tassie devils onto Maria Island in Tasmania. It was really distressing to learn that within a week or two several of those animals had been killed on the road. Obviously, these animals that have been kept in captivity and bred to make sure they were disease free had not worked out how to avoid traffic.

Probably more importantly, the humans living in Maria Island were just driving far too fast. How one drives fast on Maria Island, I have no idea, but they obviously do, so this is a very sad situation and a very costly exercise. I think we really need to adequately consider all these factors before introductions. In fact,



Briana Melideo, publisher: Photo by Dan Lunney.

there's actually a photo of the Tassie devil on the front cover. I recommend this as central reading to any agency contemplating reintroductions to ensure there is a high probability of success, but it needs to be used in conjunction with other measures to reduce the need for reintroductions in the first place.

Certainly, since that initial conference 20 years ago, a lot of advances have been made, but no introductions are simple and I think this compilation of these advances does not in any way downplay the difficulties or the major hurdles, which need to be overcome in order to have successful reintroductions. I recommend this book and I also recommend the publishers, CSIRO Publishing, for producing this comprehensive account.

Pat Hutchings, The Australian Museum

Illustrated Guide



The Reef Finder by Russell Kelley: BYO Guides, May 2015, ISBN 9780992477608, \$6.95

To produce an interactive guide and at the same time an introductory guide that does not presuppose any knowledge of reef biodiversity is a daunting undertaking. Reefs are among the most biodiverse environments on Earth. Consequently, there is a bewildering complex of species to deal with. To achieve this with such a successful outcome is an enormous credit to the author, Russell Kelley. Russell came to the task with great credentials – science communicator, filmmaker and a specialist in the field of the biology and geology of living and fossil reefs.

Essential ingredients for scientific endeavour and discovery are curiosity and observation. This guide will encourage the curious, to fine-tune their observations that will lead to identification and eventually to scientific explanations.

This is a hard-copy interactive guide as a marine environment would be lethal to a digital device. At least it is at the

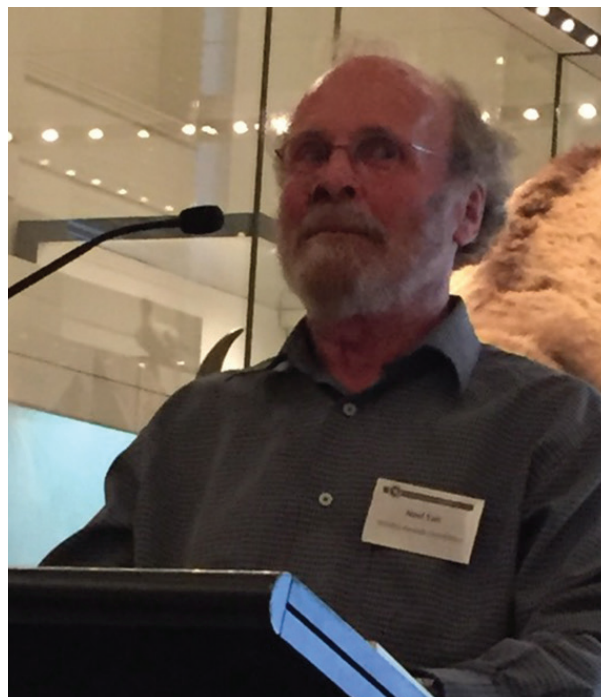
moment. Having said this, I am not sure that I could easily use it under water as I have difficulty making out the details even in a well-lit room. But this may indeed be my problem and others of advancing age. But I do acknowledge that the non-wettable paper used in the guide is at the very least a boon when dealing with wet hands in the splash zone.

The interaction separates the obvious, fish and marine mammals and reptiles versus the rest. The rest, and these are invertebrates, are identified by choices made on their physical features. These features are identified by clear illustrations. Features such as shape are identified as balls, sausages, spirals and the like. Other identification features include, spines and holes.

With reefs in danger worldwide, we need publications like this to increase awareness of their plight so that community pressure can be applied to their conservation.

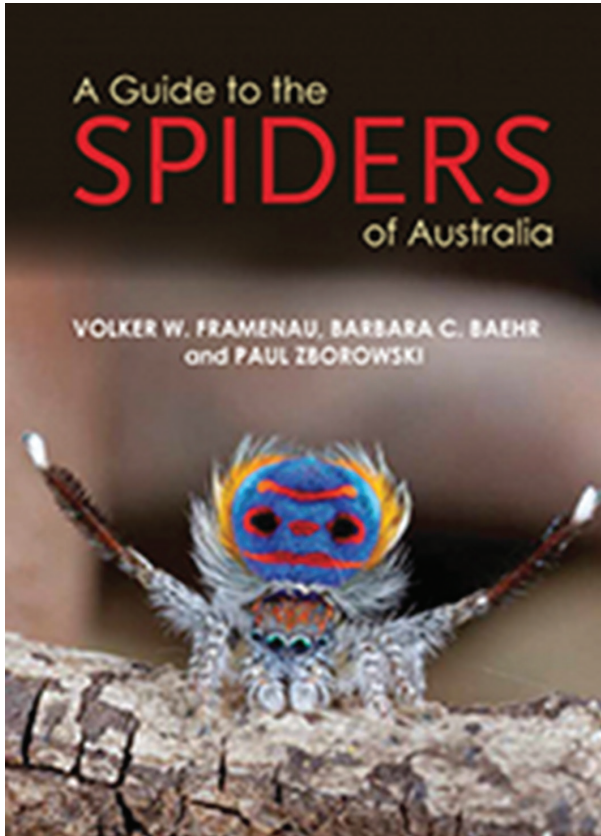
It is with great pleasure that I present the Certificate of Commendation for Illustrated Guide to Russell Kelley.

Noel Tait, Macquarie University



Noel Tait, presenter. Photo by Martin Predavec.

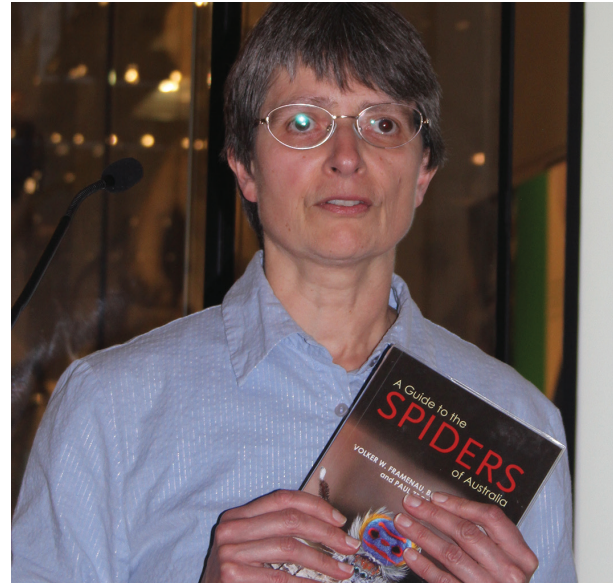
Natural History / Guide



A Guide to the Spiders of Australia by Volker W Framenau, Barbara C Baehr and Paul Zborowski: New Holland Publishers, May 2015, ISBN 9781921517242, \$45.00

As a faunal group, Australian spiders provide rather a conundrum. On the one hand, there's huge public interest in spiders. We know this because of the number of inquiries we get in Search and Discover, and also from media and public response to stories or displays. When the Museum ran an exhibition about spiders back in 1997, it was a huge hit, much to the surprise of some doubters.

So, there is a huge interest in spiders, yet strangely we've got (or had) very few resources, such as books or popular websites, to show people Australian spider diversity and allow them to identify and find out about the natural history of spiders. And the books that have been written over the years, whilst undoubtedly useful, have mostly been fairly slender offerings; furthermore, most of them are now well out of date due to taxonomic changes and re-identifications. So this excellent new book fills a big gap in Australian faunal information and, I must say, it has been much anticipated.



Helen Smith, presenter. Photo by Dan Lunney.

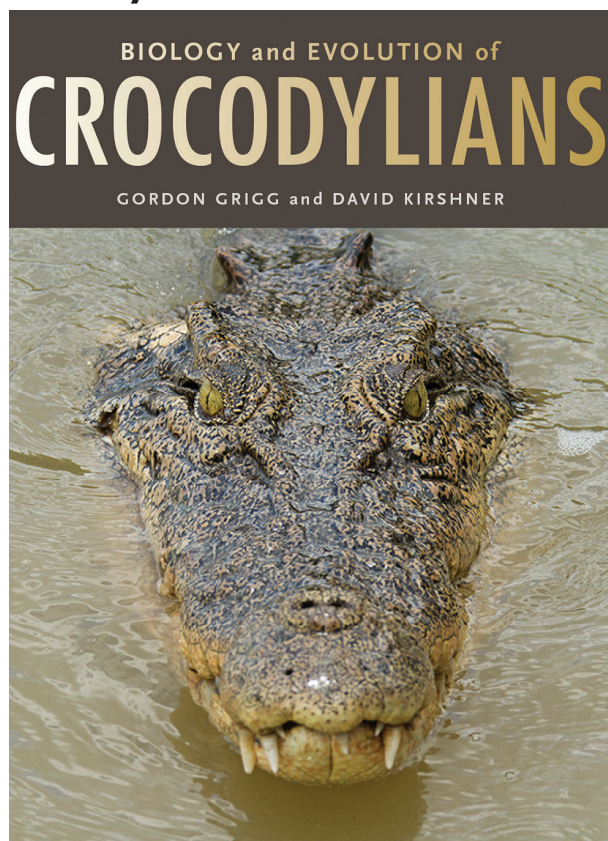
Spider keys tend to require a microscope – so there is not really a key in this publication and there is a lot of flicking through involved. But for the first time, this book actually deals with every spider family recorded in Australia and, for most of those, there are several common species illustrated. As with many guides, you have the usual general information in the front, what is a spider, spider relatives, taxonomy and life history. Then we get into spiders by family, and here the reader is provided with plenty of interesting snippets on biology as well.

As an arachnologist here at The Australian Museum, I have learnt quite a lot about spiders over the years and especially about the particular groups I have a research interest in. But I freely acknowledge that, outside my specialization, my knowledge of details of the biology and taxonomy of some spider families is pretty vague. Knowing that many taxonomists are in a similar situation, I have been most impressed by the breadth of information that has been incorporated here. Such a compilation of knowledge is a huge undertaking.

So, not only am I congratulating the authors and New Holland Publishing, but I am also saying a huge "Thank you" to them for giving us this amazing resource. I really hope that this book will help make spiders more accessible to the public in Australia and that it will help kick-start some more interest in the group. Now, at least, we can have some hope that people can be informed by science rather than by all that sensationalized media coverage that we so often get for spiders.

Helen Smith, The Australian Museum

Whitley Medal



***Biology and Evolution of Crocodylians* by Gordon Grigg and David Kirshner: CSIRO Publishing, January 2015, ISBN 9781486300662, \$195.00**

Following a distinguished academic career studying the interaction between the environment and organismal physiology, most extensively on Australian crocodiles, Gordon Grigg has teamed up with fellow 'croc biologist' and gifted illustrator, David Kirshner. This collaboration has resulted in this beautifully detailed book on these awe-inspiring animals.

Crocodylians occupy a unique phylogenetic place (within the Archosauria) as 'Reptiles'. Despite this, they have received a comparative lack of attention among

biologists as evidenced by the paucity of literature detailing aspects of their biology. This book is a landmark in publishing that comprehensively addresses that paucity of information and its synthesis.

Containing the most up-to-date phylogenetic treatment of the species within the family, there are sections within chapters covering everything from evolution, behaviour, conservation and a generous serve of physiology. The authors have not only thoroughly assembled a comprehensive text, but also discuss research directions where knowledge is still lacking in important aspects of their biology. However, this book achieves more than just this, which sets it apart to make it the obvious winner of the Whitley Medal 2015.

The writing is unlike that of many textbooks in its personal style that shines through a lifetime of experience working with these animals. It is this obvious familiarity that results in the book's accessibility and readability. So this book appeals at two levels, for those who want to browse and those in search of a reference for the resting heart rate of *Crocodylus johnstonei* during a bout of diving.

The textual material aside - there is the art. The authors have both taken and sourced a comprehensive portfolio of illustrative photographs and David Kirshner has done a stunning job of creating illustrations of anatomically accurate detail that, together with their enormous aesthetic appeal, qualify legitimately as art.

This book is clearly worthy of the Whitley Medal given its comprehensive text backed by such high quality illustrations. There is no other resource that treats this unique group of reptiles in this way. It is graphically balanced and supported by a personal style and level of detail from two people with exceptional talents who have spent a considerable amount of time with these animals. It would be fantastic if future authors of texts could adopt some of these practices.

I feel most honoured to have been asked to review this book, being a 'herp-nut' since I can recall, but still being a relatively 'young academic'. I congratulate them on their achievement in creating such an academically and aesthetically beautiful volume.

Matt Greenlees, University of Sydney



Matt Greenlees, presenter (left), Gordon Grigg and David Kirshner (Whitley medalists), and Briana Melideo (publisher). Photo by Dan Lunney.

Gordon Grigg in response: Well, thank you very much. The publication of this book in January 2015 brought to fruition a project that David and I committed to more than 30 years ago and one that took more than seven years to put together once we started. You can imagine the relief we felt to see it in hardcopy. And now having it recognised with a Whitley Medal is really the icing on the cake, it's absolutely wonderful.

David is going to say a few words from his perspective as well, but first on my list I want to thank David for his enormous contribution, his commitment, patience and unwavering collegiality and friendship. Without his spectacular photography and colour, and black and white interpretative artwork, it would have been a dull book indeed. I also want to thank my wife Jan for her patience during the writing phase. Jan thought my retirement would start when I turned 65, not 72.

We would also like to acknowledge and thank Harry Messel, to whom the book is dedicated for the support he gave us and making so many things possible. If I hadn't met Harry in 1970 and joined his then embryonic crocodile research program in the Northern Territory, I would probably never have worked on crocodiles, David would probably not have left Canada to study at the University of Sydney, and this book would never have happened. And I might add: a lot of crocodile research done by other people wouldn't have happened either because Harry's contributions affected a lot of people and a lot of crocodile research. As you all know, Harry passed away in July this year, and I am grateful that I was able to hand him a copy of the book on his 93rd birthday in March this year.

The book has a significant field emphasis and I learnt a lot about working in trying conditions with many great colleagues, particularly Peter Harlow and Laurence Taplin, both of whom are here tonight, and also Lyn Beard, who would have been here if it wasn't for teaching duties. I would also mention that another one of the crocodile mob is here tonight, and that's Graeme Wells, who is known to some of you here.

Looking more to the book itself, many colleagues worldwide have been generous with information, with photographs and with comments on draft chapters, and there are far too many people to mention, of course. The acknowledgment section lists about 200. Fay Bolton read every chapter and corrected my grammar relentlessly. And Adam Britton, who hosts on his website, *crocodilian.com*, the crocodile videos that are referred to in the book. Fay and Adam deserve special mention. Dan Lunney has been a source of encouragement. Every time I'm in touch with Dan, I have to say, it seems to lead to me refereeing a paper, writing a paper or presenting at a conference. Dan's comments on some of the draft material were most welcome.

CSIRO Publishing has been particularly easy to deal with. Briana is here this evening. Briana, thank you very much and please pass on our thanks to Tracey, who has always answered questions quickly and very professionally, and kept everything on the straight and narrow. And thank you, too, for asking my daughter, Jenny, to do the cover. I had suggested that early on in the process, but thought it had received a rather curt response, they have their normal arrangements



Gordon Grigg (left) and David Kirshner (Whitley medalists). Photo by Dan Lunney.



David Kirshner (Whitley medalist). Photo by Dan Lunney.



Matt Greenlees, presenter (left), Gordon Grigg and David Kirshner (Whitley medalists), and Briana Melideo (publisher). Photo by Dan Lunney.

and people they ask to do this sort of thing, and so I left it there. So when many, many months later cover drafts came from Jenny for comment, it came as a great surprise and joy.

Finally from me, I would like to thank the Royal Zoological Society of NSW and the Whitley Committee for the great honour they've bestowed on our book. I knew Gilbert Whitley. In fact, I'm pretty sure that he refereed my first publication, which was on a fish. I would like to think that Gilbert would approve of our crocodile book, even if the fish in it were all being eaten. With that said, I'll hand over to David.

David Kirshner in response: As Gordon said, there is far too many people to thank to mention them all individually, so I'm going to try and keep this pretty short. It's actually quite a coincidence, it's kind of funny that there's a bison behind me, because my interests in crocodylians started when I was a kid in Canada, and I grew up in Winnipeg Manitoba, and the provincial emblem for Manitoba is a bison.

So thanks to Gordon, I was able to come to Australia to actually work on crocodiles for my PhD, and it was while I was a grad student over 30 years ago that, as Gordon said, we first started talking about doing a crocodile book together. It started off with, "One day we're going to work on a crocodile book together," and then it later became, "When I retire, we're going to do that crocodile book." Gordon is many things, he's truly a man of his word, and on the actual weekend of his retirement, there was a weekend long symposium held in his honour at the University of Queensland, and it was about halfway through that weekend that Gordon leaned over to me and quietly said, "I guess we better start that book."

So we have originally anticipated a fairly slender volume on crocodiles and I discovered that I wasn't alone in thinking that we're going to do this fairly quickly. I discovered, and Gordon apparently is unaware of this, but the University of Queensland news published an interview with Gordon on the day of his retirement. I printed it out the other day. I only found this a few days ago. So the title is *Croc Book on Menu for Retiring Zoologist*. Then if you scroll down to the bottom of the article, it said, "He was looking forward to, amongst

other things, finishing his new crocodile book by the end of the year." He also went on to say that the book was tentatively titled *How Crocodiles Work*. Now, anyone familiar with crocodiles knows that they are really fascinating and complex animals, and a slender volume just wasn't going to cut it, so before long we realised that, to paraphrase a line from the movie *Jaws*, we're going to need a bigger book.

So Gordon was already in contact with CSIRO Publishing about doing a slender volume on crocodiles, and when he told them that it was going to be later and longer, and larger, they were quite okay with it and, as I said, they were still happy to publish it. I would like to thank CSIRO Publishing for their confidence in us, for sticking it out, their patience, and for all their help producing what ended up be a two kilogram brick.

So when we finally handed over the manuscript and the figures to the publishers, I rang my mother in Canada to tell her that "that croc book" was finally finished, and she's very sweet, my mother, and she asked me if we were expecting to make much money out of it. So I told her that J.K. Rowling wasn't going to be fretting any time soon. And that really was all about sharing the knowledge and sharing our enthusiasm for crocodylians. But as Gordon said, the peer recognition, it really is the icing on the cake, so I would like to thank the Whitley Committee and the Royal Zoological Society of NSW for this honour. I feel truly chuffed; that's a word I've learnt since living in Australia.

So going back to this web page, the interview with the University of Queensland, one of the things that Gordon said was that he found it really satisfying that so many of his students had become and stayed good friends, and I feel very honoured to consider myself among those. Seven years is a long time to work on a project with one other person, especially since we live in two separate cities: Gordon is up in Brisbane and I'm in Sydney. When we launched the book, I had a look at my Outlook folder to count the number of emails, and there is close to 5000 between us over seven years. That is on top of all the really long telephone conversations, which would be both in front of our



Gordon Grigg (left) and David Kirshner. Photo by Dan Lunney.

computers and poring over the minute details of the book. We very rarely disagreed on anything and, when we did, we always came to a compromise that was always better than our individual original ideas. So I would really like to thank Gordon for the opportunity to work on this book with him and for his hard work and dedication, and patience throughout. So thank you.

Briana Melideo (CSIRO Publishing) in response: On behalf of CSIRO Publishing, we're absolutely delighted that this book has won such a prestigious award as the

Whitley Medal. It's been a pleasure to work with both of you over the last couple of years as we've managed to get this book through. I'm delighted that Jenny did the cover and she did a gorgeous job, it's absolutely beautiful.

It is certainly longer than the original specs that we had, which I think was for 144 pages with eight pages of colour, but anyway. What we have is a truly monumental work, and credit to both of you, and thank you to the Royal Zoological Society for having this Medal that is so special to us. So thank you.



Matt Greenlees, presenter (left), Laurie Taplin, Gordon Grigg, David Kirshner, Peter Harlow and Graeme Wells. (Whitley medalists with team members.) Photo by Dan Lunney.

Special Commendation

Emeritus Professor Don Bradshaw is this year's recipient of the Special Commendation Award for his outstanding contributions towards the promotion of Australasian Fauna and its conservation through his many outstanding publications over an extended period. Don was the main driver of zoology in Western Australia for over 40 years, especially in his role as Professor and Chair of Zoology at the University of Western Australia from 1976 to 2004. In retirement, he is still actively involved in zoological research



Don Bradshaw (winner Special commendation). Photo by Dan Lunney.

and publication in area of biodiversity and conservation. Over the course of his career, he has written three books and over 170 peer-reviewed scientific papers and five book chapters on Australian zoology and conservation.

Don was the 2010 recipient of the Royal Society of Western Australia's Medal, an award given only once every four years, for his contribution to zoology and animal conservation. In 2009, the University of Western Australia published a Festschrift in honour of Don's contributions to science, the arts and the environment. In that publication, the late Dr Brenton Knott, one of Don's colleagues, aptly sums up Don's contributions to zoology:

Don combined the separate disciplines of zoology and physiology to become an ecophysiologicalist, researching the physiological processes of animals in their natural environments. This was an emerging discipline in the world of zoology, and Don's early mentor was Professor Maurice Fontaine in Paris, who founded the Society for Ecophysiology. Although Don's PhD thesis focused on a number of species of dragon lizards in the genus Ctenophorus (then Amphibolurus) in semiarid and arid environments, he went on to study field populations of all the major classes of vertebrates that live in environments of extreme heat where drought and dehydration are common.

[I might also add here that more recently that research has extended to insects and plants.]

Dr Knott goes on to say:

It is fair to say that, as a result of his work, it is now possible to explain overt behaviour of intact animals living freely

as well as changes in population numbers in relation to hormonal mechanisms, thus giving a new dimension to our understanding of how animal species persist in the wild.

Don also extended Professor Harry Waring's legacy with a firm belief in the marsupial as an alternate rather than an inferior mammal. This view may not be fully appreciated until one understands the stigma of being a marsupial. With an instinct that this was a misguided view, Don instigated research on several aspects of reproduction in the marsupial Quokka. He discovered that newborn joeys use a gravitational stimulus to climb upwards into the pouch and, with his physiological expertise, established that it has a secreting placenta.

A seminal article by G.B. Sharman, also a zoology graduate from UWA, in *Science*, 1970, stating that the female marsupial is unaware (hormonally) that she is pregnant provided a challenge, especially as no hormone had yet been measured. Together with Max Cake and postgraduate student Felicity Owen (Felicity and Don would later marry) and using the new technique of radioimmunoassay, they established for the first time that the endocrine cycles of pregnant and nonpregnant marsupials are not identical.

The significance of this discovery is profound in that it helped to raise the marsupial from its hitherto lowly position. The current view on marsupials is that they have solved the problems of living by using different solutions. That is an easy statement to write now, but in the 1950s and 1960s, it represented a quantum change in thinking.

Much of Don's research has challenged widely accepted perceptions of animal responses to their natural environment. For instance, in his first book, *Ecophysiology of Desert Reptiles*, published by Academic Press in 1986, Don provides a convincing argument that reptiles were preadapted to living in arid and semiarid environments, rather than evolving adaptations to specifically survive these conditions. Don's own research of desert reptiles, both in Australia and overseas, conducted over a period of more than 20 years was pivotal in leading him to this conclusion. More recently, he has applied the same reasoning to explain the responses of plant species in Mediterranean-type climates to surviving natural bush fires.

In a 20-year study of the Honey Possum, Don and his wife Felicity have been able to disprove the once widely-held opinion that this species' low rate of reproduction is, in fact, due to its high carbohydrate diet being deficient in protein. They showed that Honey Possums were able to utilise high nitrogen loads in the pollen they consumed and that the low reproductive rate was specifically attuned to their local environment through natural selection. This is yet another example of marsupials developing alternate rather than inferior strategies for survival in the Australian environment.

A key element of Don Bradshaw's research and writing has been wildlife conservation. This is demonstrated no more clearly than through his involvement in the Western Swamp Tortoise recovery program, a joint initiative of the University of Western Australia, the Western Australian Department of Conservation and Land Management, and Perth Zoological Gardens. The Western Swamp Tortoise is

the world's most endangered chelonian. In 1987, the total population size was less than 50 individuals, with 20 to 30 of these in one single population in a small nature reserve. Seventeen additional animals, of which only three were adult females were in captivity.

Fundamental to improving captive breeding of the Western Swamp Tortoise was the need to understand the species' reproductive physiology. Don appointed Gerald Kuchling as a postdoctoral fellow at the University of Western Australia where they studied the reproductive endocrinology of the captive tortoise population. This study led them to inject female tortoises with oxytocins and provide them with additional nutrients, which stimulated follicular growth and significantly improved egg production. Together with improved egg incubation techniques, this significantly increased the size of the captive breeding population and allowed hundreds of captive-bred tortoises to be released into the wild.

All these examples demonstrate a concept expressed widely in Don's writing that an understanding of a species' ecophysiology is a crucial component of promoting biodiversity conservation.

Other core areas of Don's research and writing include the ecophysiology of vertebrates on islands, the relationship between the arts and science, and the environment, and the philosophy of science.

In retirement, Don continues to be a vocal advocate for biodiversity conservation. This is evidenced in the publication of scientific opinion pieces that educate the public and people in all levels of government about the impacts of current bush fire management, the use of aquifer water for human consumption, logging of tall forests and the clearing of urban bush land on southwestern Australia's heritage as a global biodiversity hotspot.

So as you can see, Emeritus Professor Don Bradshaw is indeed a worthy recipient of the Royal Zoological Society of New South Wales Special Commendation. Therefore, on behalf of the RZS, I invite Don to accept this award and say a few words in reply.

Stephen Ambrose, RZS NSW Councillor and Environmental Consultant

Don Bradshaw in response: *Thank you very much, Stephen, for that stimulating delivery. I think I can only really echo my mentor, old Professor Harry Waring, who said that flattery is all very well as long as you don't inhale. So I shan't breathe deeply after listening to all of that. You've been doing a lot of research there, Stephen, I can see.*

There are some disadvantages to living in the West: distance and repetitive rightwing governments; there are a couple that spring to mind. But I have to say that the West is a zoologist's paradise and it's a wonderful place where we are losing many of our species very rapidly. But we still have a very large percentage of them when you compare with some states like, say, South Australia.

I did my PhD on dragon lizards, as Stephen mentioned, and this was a time when we didn't even really have the names of the species. I actually started off with A, B and C. I only knew clearly what one of them was at that particular time. I was

interested in problems with temperature regulation and how they deal with lack of water. By the end of my PhD, I was aware of the fact that I really couldn't answer the ecological questions that I was posing without an understanding of how hormones worked in reptiles. At that stage, no one had the faintest idea what hormones did in reptiles at all, so I spent a period of time overseas in the UK and in Paris and then California basically acquiring and developing techniques to measure hormones in very tiny amounts of fluid.

I started working on eels. Actually, they were the first group of animals I worked on, and in Sheffield they could measure cortisol levels in two litres of eel blood, and by the time I left Sheffield we got it down to two millilitres, so the methods were getting a lot better. By the time I got to California, we were down to 20 microlitres, and it was the development of those methods that enabled me to come back here and then start looking at what the hormones did.

I came back as a lecturer at UWA and I set up a lab to study the way the hormones worked, particularly on the kidneys of lizards, but also set up a field program because I was convinced at that time it was essential to not only work in laboratories (which I think in many ways all you really study is how animals respond to stress), but to actually work in their natural environment and find out what they really did. So I went up to Shark Bay where I actually worked for my PhD and set up a longterm field study.

Stephen used to come up on some of these field trips to Shark Bay. We never saw him, actually. Very early in the morning, about 4 o'clock, we would hear this tapping sound and we weren't sure whether there were woodpeckers in Australia or not, but we discovered that there weren't; that it was basically Stephen putting in his pegs for his mist nets and then he would come back after dark and collapse into his sleeping bag. And that was all we ever saw of Stephen when he was doing his PhD on scrubwrens.

That sort of study was really very important in enabling me to find out what was really happening with these lizards in this

environment, and to my great surprise and everyone else's we discovered they were actually annual species. These big lizards - about this big - only actually lived a year. In actual fact, they all died in summer and the population completely crashed. They would have laid their eggs, of course in spring, but they died in the summer, and the next year the young would come out to a totally bare environment.

Many of the *Ctenophorus* are essentially semelparous species in this way, but at first sight you would never imagine that these things could grow so rapidly and breed and get it all over and done with and then die. In fact, this is how I got onto the idea that the animals weren't at all adapted to that desert environment. They in fact were killed by their environment, they died of starvation. They starve to death because it was so hot that they had to spend so much of their time in high temperature avoidance behaviour patterns they couldn't actually feed, so what happens as summer goes on they starve to death and they die.

It was very surprising sort of stuff for me and for other people. When you actually got down to find out what they were doing in their real environment, and you never find this out in a laboratory at all. Anyway, as much as I love working on lizards the lure of working on marsupials reared its head of course. You can't work in Australia and not work on marsupials, and Stephen has already told you a little bit about it. The accolades really go to Felicity for that discovery, that in the pregnant females there was an endocrine difference between pregnant and nonpregnant individuals.

It seems extraordinary that people actually thought that pregnant females don't know they're pregnant, but that's what was the case in marsupials back at that time. The thing called maternal recognition of pregnancy didn't exist. I always thought this was rubbish, but Felicity and Max were the people who actually did the work. I think I did very little in the way of supervision of Felicity, I think she worked very hard on me, and I just sort of came in and said, "Have you got any data to look at?"



Stephen Ambrose (left) presenter, Felicity Bradshaw and Don Bradshaw. Photo by Dan Lunney.

This was the start of the work in that sort of area, and because of our work on marsupials I was lucky enough to get ARC funding to work on Barrow Island. Barrow Island really is Australia's most important A Class Reserve. There's 13 species of mammals on the island, eight of them are marsupials, and four of those eight marsupials are either extinct on the mainland or almost so, or virtually so, so an incredibly important environment. It's the place where Chris Dickman fell in love with Golden Bandicoots.

I had a tremendous team of people working with me, Chris, Ron Wooller, Phil Withers, Keith Morris, and we used to go up there and we worked on about eight different vertebrate species simultaneously. Normally, when you do field work and you're measuring water turnover you work on one species at one time and you might come back and do a different season thing, but we had eight going simultaneously. It gave us a real opportunity, we were measuring field metabolic rates using stable oxygen isotopes, and essentially it meant that we could suddenly look at the environment and see how each different species was breaking things up and how they were partitioning all the resources on the island, and you could use oxygen as a common currency, and it became very, very interesting.

When you actually look at it, you see that the big animals like the Barrow Island Euro are really energetically quite insignificant on the island, it's the Golden Bandicoots that really run that whole ecosystem. I had been for a long time trying to discover an arid-adapted bird. When you look at all the birds in Australia and you see the ones in the desert, when you go there when it's really hot, they're not there.

With the *Spinifex* Bird, we thought that we had discovered an arid-adapted bird, and so we wanted to study them and look at their water physiology particularly. So we would mist net them and we would capture them, we would mark them, we would weigh them, or we put tags on them, we bled them, we put little radio transmitters on them and let them go, and expected that the next day or the one after they would fly back into our mist nets.

In actual fact, what they did is they would fly up the mist net and go over the top and carry on and we could not recapture these things. It's not surprising when you think of what you're doing to these poor little birds. Anyway, in desperation I rang up Stephen who was in Sydney at the time, and said, "Can you help us?" and Stephen didn't hesitate, he got on a plane and came across. He didn't even bother to put any proper field gear on and took off into these terrible spinifex clumps chasing these birds.

After a series of excited screams, he would emerge with these little birds in his hand. There's no more horrifying sight, I think, that I've ever seen, than looking at Stephen's legs in the evening back on Barrow Island which were like pin cushions with these little needles of these *Triodia*, these spinifex things in them. Quite amazing, so you'll see a very dedicated bird man, he's prepared to put up with that. If you've ever walked through a spinifex clump, you know exactly what I'm talking about.

The needles on the spinifex leaves, they are needles, they're just terrible and they just sort of penetrate everywhere. The Barrow Island study, I think we were very lucky to get funding to do that sort of work, and I think it laid the

ground work for a lot of the conservation work that has been done since then. For example, Dorian Moro, who was here earlier was another one of my students who worked up on Thevenard Island. I think what I really would like to sort of conclude, in a sense, is to say that I think I've had an extremely lucky life, I've been very fortunate.

I didn't really want to go back to Western Australia because I had actually done my basic degree there, and in general, in many ways, it's not a good idea to go back to where you first came from. In fact, I had been offered a job by Ralph Slatyer in Canberra; he was setting up the research school, and I stupidly let Harry Waring know that I was thinking of going to Canberra and immediately got a job offer to come back. They said they actually saved a job for me, so I sort of felt obliged to go back to WA.

It turned out to be, as I say, an excellent place to be and is really so much of a zoologist's paradise in that sense. I think I can really only say that I think I've been extremely fortunate in what I've been able to study. Every vertebrate group I've worked on, I've been able to publish on, and the interesting thing is the last couple of decades Felicity and I have been working on Honey Possums, which are the most fascinating little animals.

Stephen was mentioning we were truly trying to test out a hypothesis of Tony Lee's, that the relatively low reproductive rate of Honey Possums was related to their rather strange diet, which is made up entirely of nectar and pollen. If you live on nectar and pollen, you will get diabetes fairly rapidly, yet these little animals were doing very, very well. The theory was that they might be deprived of nitrogen, not enough protein in their diet.

In those days, of course, when Tony was writing it was 1984, pollen was thought to be indigestible. Of course, the outside of pollen, the exine, is indigestible but the inside is full of nitrogen; a very nitrogen protein-rich diet. Felicity was the one who actually did the work measuring the minimum nitrogen requirements of Honey Possums, which is very, very difficult work to do and not for the faint-hearted. When we discovered, when we worked out and found out how much they really do need, their diet has 10 times as much nitrogen as they require for their daily balance.

The hypothesis was totally wrong. This is one of the good things about science, you can erect hypotheses and you can eliminate them. You can never actually prove anything as being true, but you can eliminate forces, and that's the way science proceeds. The reason that Honey Possums have such a low reproductive rate is because they're exceptionally good mothers and they look after their babies very much better than so many of the other marsupials. They don't really need to have a higher reproductive rate to maintain themselves.

The last thing I wanted to mention was that all of our early work was done measuring field metabolic rates using oxygen and tritium, the oxygen isotope, O-18. The O-18 is a stable isotope, we developed a method here at Lucas Heights to measure the oxygen isotope and we used to have a lot of fun coming across to Sydney to actually measure our samples. Towards the end of the period, we developed another method to measure the metabolic rate of free-ranging Honey Possums using a radioactive isotope of rubidium, rubidium-86, which is

very similar to potassium, and that method worked very well. It's much cheaper and much easier to work with than the O-18. You didn't have to come to Sydney and go to Lucas Heights to measure samples, you just really have to take your animal and put it on a gamma counter and let it go again and then catch it again. The really interesting thing is I am involved in another ARC project at the moment working on pollination, and I've scaled the method right down. I suppose three or four weeks ago we measured the field metabolic rate of Honey Bees, so it's really the first time that anyone's been able to measure the actual

metabolic rate of free-ranging small insects, so I think there's a great future for this technique.

As I say, working on vertebrates for so long it's really nice to actually end up on an insect. I would really just like to thank the Royal Zoological Society of NSW. I'm having to think very carefully about my tendencies for a republic, because there's two royal societies now that are suggesting that maybe monarchy is the way to go, but thank you very much, I'm very pleased and very humbled, thank you. In all honesty, I'd have to say that half of my work was done by Felicity. I just sort of wrote the papers.

For further information, see our website: rzsnsw.org.au.

Whitley Awards 2015



Noel Tait, presenter. Photo by Dan Lunney.



Museum venue with the presenters and Whitley award winners. Photo by Dan Lunney.



Museum venue with the presenters and Whitley award winners, with Gordon Grigg looking at the camera. Photo by Dan Lunney.



David Kirshner looking at the camera. Photo by Dan Lunney.

Whitley Awards 2015



Pat Hutchings and Martin Predavec, RZS NSW council members. Photo by Dan Lunney.



Stephen Ambrose, council member. Photo by Dan Lunney.